Three Faces of Integrative Coordination: A Model of Interorganizational Relations in Community-Based Health and Human Services

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Objective. This study develops a theoretically justified, network-based model of integrative coordination in community-based health and human services, and it uses this model to measure and compare coordination in six elder service systems.

Data Sources and Study Setting. We collected data between 1989 and 1991 in six Alabama counties, including two major MSAs, two small MSAs, and two rural areas.

Study Design and Data Collection/Extraction Methods. Our measurement of coordination is based on patterns of interorganizational relationships connecting the agencies constituting a community-based health and human services system. Within each site, we interviewed representatives from these agencies, asking them to indicate client referral, generalized support, and agenda-setting relationships they had developed with each of the other agencies in the system. Using network analysis procedures we then identified the network associated with each of these organizational functions (i.e., service delivery, administration, and planning) in each site, and we assessed levels of coordination in each network.

Principal Findings. Our measure of integrative coordination is consistent with other indicators of coordination we derive from our data, suggesting its validity. In addition, levels of integrative coordination across sites for each organizational function are generally comparable. Comparisons across sites show integrative coordination to be consistently highest for service delivery networks and lowest for planning networks.

Conclusions. Previous attempts to assess interorganizational coordination without regard to organizational function are subject to misinterpretation. The differing interorganizational dynamics involved in service delivery, administration, and planning appear to generate different patterns of interorganizational relationships, and different levels of coordination.

Keywords. Coordination, network analysis, elder services, interorganizational relationships

The past two decades have witnessed a great shift in the way American society thinks about public health and health-related issues. In the past, such concerns as mental health, alcoholism, drug abuse, aging, and child abuse were largely private matters, to be dealt with by families and individuals outside of the public conscience. But today, each of those concerns has become part of the public agenda, with substantial public (and private) resources committed to their resolution. As an outgrowth of these resources, most medium-sized and large communities now have a number of private and public agencies and organizations that deal with problems of mental health, substance abuse, the elderly, and children. But with increased awareness of public health problems and the proliferation of agencies and organizations brought about by increasing resources comes what might be called the *paradox of success*: although communities are spending more money to ameliorate public health problems, each dollar has a decreasing impact. The explanation for the paradox of success seems simple: as more community organizations and agencies emerge to address local needs, they must compete more for clients and other resources, and they are less able to work harmoniously toward systemwide goals. In other words, the larger the number of distinct agencies and organizations attempting to achieve a common goal, the less likely they will be to work in a coordinated manner to achieve that goal. This leads to an extension of the paradox: as the number of agencies delivering divergent services grows, the community becomes better able to address social needs in a comprehensive manner; but the very proliferation of services constrains the service providers from functioning as a coordinated system.

This issue of coordination has gained the attention of policymakers at all levels of government, and improved coordination has become a priority for a number of federal and state agencies funding social research; further, it surfaces implicitly in models of health care reform (e.g., managed competition, managed care, systems integration). Yet those who seek to improve coordination among local organizations and agencies providing health and human services are bound to be discouraged by the literature on organizational theory and practice. On the one hand, the literature on

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organizational practice strongly argues that the delivery of these services is fragmented and uncoordinated generally (e.g., Reid 1975; Austin 1978), and within each of a wide variety of policy domains researchers have found fragmentation and lack of coordination; these include mental health (e.g., Morrissey, Tausig, and Lindsey 1985; Paulson 1987); substance abuse (e.g., Holder and Stratas 1972; Einstein 1984; Baekland and Lundwall 1977; Roizen and Weisner 1979); aging (e.g., Marmor and Kutza 1975; Kaluzny and Fried 1986); child abuse (e.g., Byles 1985; Hochstadt and Harwicke 1985); and homelessness (Federal Task Force on Homelessness and Severe Mental Illness 1992). Holder and Stratas (1972, 32) put the case succinctly when they described community-based substance abuse programs as "cluttered, disjointed, overlapping, uncoordinated, and ineffective public and private programs that are opportunistic and responsive primarily to an immediate crisis."

The literature on organizational theory goes on to suggest that this state of affairs is unlikely to change of its own accord. Reid and Chandler (1975: quoted in Sarason, Carroll, Maton, et al. 1977) conclude that

> the delivery of human services in most communities suffers from fragmentation, needless overlap and glaring omissions which provide stark evidence of failure in rational management. In such a climate. . . organizations tend to focus on activities relevant to each organization's prestige and power. (p. 171)

This is consistent with Van de Ven and Ferry's (1980, 307) formulation: "Organizations do not coordinate for coordination's sake. Indeed, organizations strain to maintain their autonomy." Morrissey, Tausig, and Lindsey (1985) add:

> Interorganizational relationships involve costs as well as benefits to participants. Each organization gives up some control over its own affairs and decision making flexibility. Each organization must also invest some of its scarce resources in developing and maintaining its external relationships. This reluctance to form relationships is a continuous barrier to the development of stable interorganizational structures. (p. 13)

TOWARD A DEFINITION OF COORDINATION

EARLY DEFINITIONS

Unfortunately, coordination is a term that is often used without any exact referent, and in some cases researchers report lack of coordination without either (a) indicating an empirical basis for their conclusions, or (b) indicating what empirical findings they would accept as evidence of coordination. Early work (e.g., March and Simon 1958; Litwak and Hylton 1962)

tended to view coordination in terms of organizational rules and procedures: do they use standardized language and forms? do they establish common rules, policies, and procedures? do they engage in monitoring through memos, reports, computerized information systems? Today, this seems a rather pedestrian and one-dimensional view of a complex issue. But alternative formulations were slow to develop, and even when proposed were not completely satisfactory. For example, Reid (1965, 359) viewed interorganizational cooperation as the voluntary exchange, between two or more autonomous agencies, of complementary resources needed to achieve shared goals. But researchers have been debating the operational definitions of these terms (such as *exchange*, *resources*, and *complementary goals*) for a quarter century, without any clear resolution.

COORDINATION THROUGH INTERORGANIZATIONAL RELATIONSHIPS

Even so, Reid's definition signaled one of the first attempts to move away from the study of organizational procedures as an indicator of coordination, and toward a more complex formulation: interorganizational relationships–and their aggregation, the interorganizational network–as an indicator of coordination. While not the only determinant of coordination,[1] researchers (e.g., Van de Ven and Ferry 1980; Mulford 1984; Morrissey, Tausig, and Lindsey 1982, 1985) continue to acknowledge the importance of interorganizational relationships as an important component of coordination. Simply stated, when the interorganizational system is structurally fragmented, coordination is low; when it is structurally integrated, coordination is high. In the next sections, we discuss this as *integrative coordination*. This does not mean that we dismiss other dimensions of coordination (see note 1) as unimportant; in fact, we return to them in later sections. However, our focus on integrative coordination does reflect its continuing theoretical and methodological importance.

In an effort to clarify the meaning of interorganizational cooperation, several of Reid's ambiguous terms have been dissected extensively. For example, Van de Ven and Ferry (1980) identify no fewer than six specific resources that might be exchanged among organizations, including client referrals, money, and staff. At a more molar level, other researchers (e.g., Reid 1965; Gans and Horton 1975) have differentiated between interorganizational linkages involving service delivery resources (e.g., client referrals, information exchange regarding specific clients) and those involving administrative resources (e.g., money, staff). In a similar way, Van de Ven and Ferry (1980) differentiate between interorganizational relationships developed to meet the internal needs of the organization and those developed to address

external problems, opportunities, or mandates (cf. Emery and Trist 1965). When we combine these formulations, we obtain three general functions endemic to organizations providing health and human services and, by extension, to community-based health and human service systems: service delivery, administration, and planning. All three occur *within* health and human service organizations; but all three also occur *among* organizations, in the form of coordinative activity.

Despite these advances, however, conclusions about coordination seem still to be applied globally to community-based health and human service systems rather than to specific functions of these systems.[2] By drawing such global conclusions, researchers lose conceptual clarity. When they combine data from these divergent functions into a single measure of coordination, they potentially come to inappropriate conclusions; but just as important, they are unable to identify the action that may be required and where it should be directed to ameliorate the lack of coordination.

This lack of conceptual clarity is somewhat similar to that experienced by the policy sciences 20 years ago, when researchers addressed the policy process as a unitary phenomenon–with distinctly confusing findings. Only when agenda setting, enactment, and implementation were differentiated did previously uninterpretable results begin to make sense (e.g., Pressman and Wildavsky 1973; Elmore 1978). Our formulation of system functions loosely parallels the policy process model, with planning corresponding to agenda setting, administration corresponding to enactment, and service delivery corresponding to implementation.

PATTERNS OF INTERORGANIZATIONAL RELATIONSHIPS

In an equally important indictment of previous research, analysis procedures for inferring integrative coordination from the structure of interorganizational relationships are poorly developed and lack theoretical justification. One approach is to calculate the density of interorganizational relationships (i.e., the proportion of possible relationships actually observed), with the simple assumption that more relationships reflect better coordination (cf. Wickizer, Von Korff, Cheadle, et al. 1993); another is to assume that increased levels of contact among agencies, or increased dependence among agencies, constitutes coordination (Van de Ven, Walker, and Liston 1979). These assumptions may hold at the lower and upper ends of the spectrum: a system where no organizations work together cannot be coordinated, while a system where all organizations work with each other must be coordinated (albeit inefficient, given the cost of establishing and maintaining those relationships). On the other hand, two systems with equal density

or levels of interaction (in the middle ranges) are not necessarily equally coordinated. To differentiate among them, it is necessary to examine the *pattern* of interorganizational relationships. But while the concept of pattern is useful, the operationalization of this concept has been elusive, and to date no satisfactory measure of a coordinated pattern of interorganizational relationships has been developed.[3]

Our approach to defining the pattern of relationships among organizations–and thus the integrative coordination of the system–uses a logic initially suggested by Emery and Trist (1973), amplified by Katz and Kahn (1978), and advocated by Leiter and Webb (1983) and Tucker, Heil, and Goodman (1984). In their view, every interorganizational network is *clustered* into groups of agencies centered on specific needs. The system is fragmented to the extent that each of these groups (or clusters) of organizations is isolated or self-contained, with different clusters separated by philosophical, geographical, or legal barriers; and it is coordinated to the extent that these barriers are permeable, with strong connections existing among the groups.[4] Examples of interorganizational barriers that might create a fragmented system include: (a) philosophical barriers between health and social service agencies; (b) geographical barriers between poverty agencies and those serving primarily middle class clients; (c) geographical barriers between agencies serving rural and urban clients; and (d) legal barriers between agencies serving only elderly clients and those serving all age ranges.

The concept of interorganizational barriers separating organizational clusters has become particularly important in an era of deinstitutionalization, where the mentally ill, the mentally retarded, ex-offenders, the physically handicapped, and the elderly all require a wide variety of services to function in the community (Neugeboren 1985). When organizations providing one type of service refer clients to, get information about, and otherwise interact with organizations providing other types of services, the interests of multiple-need clients are served more effectively than if such interaction does not occur. This is the essence of integrative coordination in the delivery of services. Similar arguments can be made with respect to administrative coordination and coordination in the planning process. When agencies serving similar needs interact only among themselves, their perspectives are limited, and they tend to fashion narrow solutions to problems (cf. Rogers and Kincaid 1981). When this insularity breaks down, and the system becomes structurally integrated rather than fragmented, integrative coordination exists.

In the following sections, we suggest a measure of integrative coordination, derived from this theoretical definition of pattern, in health and human service networks. In doing so, we introduce the language of networks and network analysis, which has become an integral part of the literature on

coordination in health and human services. Then, using our network-based measure, we examine the level of integrative coordination in service delivery, in program administration, and in planning in the elder services system in Madison County, Alabama. We then supplement the conclusions we reach about Madison County with data from five other Alabama counties.

METHOD

Madison County has a population of approximately 200,000 (78.6 percent white, 21.4 percent nonwhite), most of whom live in urban areas. Huntsville, the county's largest city, has a population of approximately 163,000. Huntsville's chamber of commerce proclaims it the "high-tech capital of the South," which is reflected in its high median family income ($20,261 in 1980, compared with $16,347 for Alabama). Several colleges and universities are located in Huntsville; in addition, Huntsville has four hospitals, two daily newspapers (four weekly papers), and five television stations. The high income and high educational level in Huntsville allows it to offer a variety of cultural activities.

DATA COLLECTION

In 1989, we identified 49 organizations and agencies in Madison County that provide services for the elderly.[5] (Most of these provide services to a wide range of other age groups as well, and some serve relatively few elders.) We interviewed one or more representatives[6] of 47 of these organizations,[7] asking them to answer several questions on an *interorganizational analysis questionnaire.*[8] Specifically, we asked them to consider separately each of the 48 other organizations we had identified, and to answer the following questions:

1. Do you make referrals to the organization?
2. Do you receive referrals from the organization?
3. To what extent has the organization been helpful to your organization in allowing it to achieve its goals?

Respondents answered questions 1 and 2 as either "yes" or "no," and for question 3 they used a five-point rating scale. In addition, respondents indicated the services their organizations provide.

As a second stage of the study, we interviewed 25 key informants, asking them to name people in the community who are most involved in setting the community agenda to meet the health and human service needs of the elderly. Based on these interviews, we compiled a list of 185 community leaders, whom we listed alphabetically on a *leadership questionnaire.*

We interviewed 155 people from this list, asking them to (a) review the names and (b) identify as many as 15 people from the list who they felt were currently making the most important positive contribution to setting the community agenda for meeting the needs of the elderly. In our view, these choices reflect the people to whom the respondent is likely to listen during the community agenda-setting process.

DATA ANALYSIS

Service Delivery. Service delivery is the *raison d'etre* of health and human service organizations. Although interagency coordination in client services potentially can be assessed in a number of different ways, it is most commonly measured as client referrals (e.g., Levine and White 1961; Van de Ven, Walker, and Liston 1979). We, too, take this approach. In accordance with our previous discussion, a coordinated client referral system would allow clients to move among agencies, unrestricted by interorganizational barriers. In analyzing interorganizational referrals, we combined Questions 1 and 2 from the interorganizational analysis questionnaire to obtain a measure of confirmed referrals. Specifically, we defined a 47 × 47 adjacency matrix[9] of referrals $\mathbf{A}_{(\mathbf{R})} = \mathbf{a}_{(\mathbf{R})}[ij]$, such that $\mathbf{a}_{(\mathbf{R})ij} = 1$ if organization i indicated that it refers clients to organization j and j indicated that it receives client referrals from i; otherwise, $\mathbf{a}_{(\mathbf{R})ij} = 0$.[10]

Administration. Administrative relationships among organizations typically involve resource transactions that allow the organizations to more effectively achieve their goals (Van de Ven, Walker, and Liston 1979). These resources may include funding, shared staff or facilities, joint programs, and technical assistance (Van de Ven and Ferry 1980); they may also include information and social support (Galaskiewicz 1979). In a coordinated system, interorganizational barriers are only weakly defined, and resources flow across them with ease; this, in turn, guarantees that resources are spread throughout the system, and that one set of organizations does not grow strictly at the expense of others.

Rather than asking separately about each of these resources, we combined them into a single question (question 3 on the interorganizational analysis questionnaire), which respondents answered using a five-point rating scale. To control for the possibility that different respondents would use different ends of the rating scale, we converted these responses to within-respondent z-scores.[11] From these transformed responses, we constructed a 47 × 47 matrix $\mathbf{G} = \mathbf{g}[ij]$, indicating the extent to which organization i depends on organization j to achieve its goals. In considering these relationships, we were particularly concerned with situations where two organizations perceived one another as mutually helpful in achieving their

goals.[12] We therefore constructed a symmetrical adjacency matrix $\mathbf{A}_{(G)} = \mathbf{a}_{(G)}[ij]$, with $\mathbf{a}_{(G)ij} = 1$ if $\mathbf{g}_{ij} + \mathbf{g}_{ji} > 2.50$; otherwise $\mathbf{a}_{(G)ij} = 0$. Although this is a somewhat artificial criterion, it simultaneously limits the maximum density of the network to approximately .11 and identifies relationships between those organizations that are most interdependent.

Planning. Our discussion of planning centers not on the needs of individual organizations, or even on the joint needs of pairs of organizations. Rather, we focus on the needs of the overall elder services system. In this sense, planning is an agenda-setting activity, wherein the general set of controversies and concerns that merit the attention of the polity are addressed (Cobb and Elder 1983). This involves identifying and defining problems; formulating solutions to the problems; and developing consensus around one or another proposed solution. As such, agenda-setting not only reflects organizational interests but also the individual interests of organizational administrators and staff, and as a consequence, it must reflect interpersonal relationships among these individuals as well as interorganizational relationships (Wilson and Bolland 1992).

To identify these interpersonal relationships, we analyzed respondents' agenda-setting choices from the leadership questionnaire. Since we are concerned with the *exchange* of ideas and information, we assumed an interpersonal relationship when two respondents selected each other. This yielded 207 symmetric *agenda-setting* relationships between 125 individuals, for an overall network density of .027. However, organizational concerns are important determinants of the emergent agenda, and we therefore aggregated these interpersonal agenda-setting relationships to the interorganizational level. To this end, we determined the organizational affiliation of each of the 125 individuals; we then defined a link between two organizations i and j if at least one individual affiliated with i had an agenda-setting relationship with at least one individual affiliated with j.[13] This yielded a symmetrical 49 × 49 adjacency matrix $\mathbf{A}_{(A)} = \mathbf{a}_{(A)}[ij]$. In a coordinated system, individuals are able to share their ideas and dreams for the future without being constrained by interorganizational barriers.

Identifying Organizational Clusters. As suggested earlier, interorganizational barriers reflect divisions among clusters or groups of organizations; thus, identifying these organizational clusters is a necessary first step for assessing coordination. Unfortunately, advocates of network clustering as an approach to measuring integrative coordination have not suggested any analysis procedures to operationalize this concept. A major problem, of course, is the difficulty of identifying specific barriers to interorganizational relationships a priori, and hence the potential factors that may cause organizations to cluster together. Our solution to this difficulty is to identify groups of similar organizations, based not on any a priori assumptions of

what factors contribute to this similarity, but instead by identifying groups of similar organizations on the basis of the other organizations they interact with.[14] If the network of interorganizational relationships is cliquish,[15] and few relationships link different cliques, integrative coordination is lacking. On the other hand, if cliquishness is minimal, then (by definition) there exists a relatively large number of relationships linking different clusters (which themselves are poorly defined), and (also by definition) integrative coordination is high.

To identify the clusters of organizations within each function, we transformed each of the adjacency matrices (i.e., $\mathbf{A}_{(R)}$, $\mathbf{A}_{(G)}$, and $\mathbf{A}_{(A)}$) into an information matrix $\mathbf{H} = \mathbf{h}[ij]$ (see Bolland and Woods 1987), as follows:

$$h_{ij} = \left[\log_2 \left(\frac{\sum_{m=1}^{k} \mathbf{a}_{(.)im}}{k-1} \right) + \log_2 \left(\frac{\sum_{m=1}^{k} \mathbf{a}_{(.)mj}}{k-1} \right) \right] \mathbf{a}_{(.)ij}$$

where k = the number of network members and $\mathbf{h}_{ij}$ = the mathematical information conveyed by the relationship between i and j. Then we used a hierarchical clustering procedure (D'Andrade 1978) to identify increasingly agglomerated clusters of organizations (in effect, representing coherent subnetworks, or cliques); at each level of agglomeration, we constructed a partition matrix $\mathbf{P} = \mathbf{p}[ij]$, where $\mathbf{p}_{ij} = 1$ if i and j are clustered together and $\mathbf{p}_{ij} = 0$ if they are not. We summarized the overall cliquishness represented by any given level of agglomeration as the relationship between **P** and **A**, as follows:

		P	
		$\mathbf{p}_{ij} = 1$	$\mathbf{p}_{ij} = 0$
A	$\mathbf{a}_{ij} = 1$	number of i–j pairs that are linked in the network and are in the same partition	number of i–j pairs that are linked in the network and are in different partitions
	$\mathbf{a}_{ij} = 0$	number of i–j pairs that are not linked in the network and are in the same partition	number of i–j pairs that are not linked in the network and are in different partitions

From this table, we calculated Somers' d_{yx} (conditioning on density), which increases with greater within-subnetwork density and decreases with greater between-subnetwork density. We accept as the final solution the partition that maximizes the value of d_{yx}, and we treat the maximum value of d_{yx} as the index of fragmentation in the network. Since this fragmentation index varies between zero and one, we can measure structural integration (and hence integrative coordination) as its complement.

RESULTS

SERVICE DELIVERY

The Madison County interorganizational referral network contained 629 asymmetrical relationships, for an overall density of .291. The cluster analysis of these data yielded three organizational subnetworks: an elder/social services subnetwork with 15 organizations; a health services subnetwork with 17 organizations; and a poverty/emergency services subnetwork with 15 organizations. Table 1 shows that, although the majority (52 percent) of interorganizational relationships link organizations within each subnetwork, a substantial number (48 percent) also link organizations in different subnetworks. Overall, the integrative coordination index is .72.

As an alternative formulation and validity check on our measure of integrative coordination in service delivery, we calculated a measure of *interorganizational access to services* as a second indicator of integrative coordination in service delivery.[16] Specifically, we identified 12 different types of services that organizations offer their clients, as follows:

1. Health services
2. In-home services
3. Transportation services
4. Housing services
5. Mental health/Counseling/Support services
6. Recreation/Leisure/Volunteer services

Table 1: Interorganizational Referral Patterns between and within Subnetworks

		To		
		Elder/ Social Services	*Health Services*	*Poverty/ Emergency Services*
From	Elder/Social Services	99*	43	52
		.47†	.17	.23
	Health Services	56	131	49
		.22	.48	.19
	Poverty/Emergency Services	56	45	99
		.25	.18	.47
	Number of organizations in the subnetwork	15	17	15

*Number of referral relationships.

†Density of referral relationships.

7. Information and referral services
8. Nutrition services
9. Income maintenance/Emergency food, clothing, rent, utility services
10. Employment services
11. Legal services
12. Protective services

We then determined the number of direct referral linkages among the different types of services. Table 2, which reports these results, shows that efficient referral patterns have been developed among the different types of services,[17] and that a client entering the system for one problem can efficiently be referred to another organization that is able to address virtually any other need that he or she may have or develop. At the individual agency level, 12 of the 47 organizations have established direct referral linkages with other organizations providing each of the 12 services, and 8 additional agencies have established direct referral linkages to organizations providing all but one of the types of services; on average, the agencies we considered have established direct referral linkages to agencies providing 9.79 different types of services. This, too, indicates very good integrative coordination, and it provides some validation for the previous finding.

Table 2: Madison County Interservice Referral Access

		To Service Type*											
		1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
From Service	*1*	109	45	57	21	45	18	8	28	46	21	9	21
	2	39	43	58	22	23	27	7	35	44	18	6	14
	3	40	48	79	18	27	34	11	44	40	20	7	16
	4	24	23	23	18	13	8	5	11	31	10	2	7
	5	39	24	35	16	26	14	5	20	29	12	4	9
	6	20	32	46	8	10	27	5	34	24	14	7	13
	7	7	7	9	5	6	4	1	6	9	3	1	2
	8	25	31	48	8	15	27	7	36	27	14	6	12
	9	39	37	48	31	22	15	10	25	61	14	3	11
	10	18	15	21	8	7	12	2	15	14	9	3	6
	11	7	5	9	2	4	6	1	7	4	3	1	2
	12	18	11	19	7	7	11	2	13	11	6	2	4
Number of organizations providing type of service		15	8	15	8	8	8	1	8	11	3	1	2

*Services listed here correspond, by number, to those specified in the text, pages 351–352.

ADMINISTRATION

The Madison County goal support network contains 111 symmetrical interorganizational relationships, for a density of .10. The cluster analysis of these data presents a somewhat different picture of integrative coordination than that obtained for referrals, however. This analysis yielded five organizational subnetworks: an elder/social services subnetwork consisting of 15 organizations; a health services subnetwork consisting of 14 organizations; and three poverty/emergency services subnetworks, consisting of eight, six, and four organizations, respectively. Table 3 shows the interorganizational relationships within and between these five subnetworks. Unlike the referral network, however, the goal support network appears to be much more cliquish, with 73 percent of the interorganizational relationships linking organizations within the same subnetwork and only 27 percent linking organizations in different subnetworks. The overall integrative coordination index is .45.[18] Figure 1a shows this network. Even though it is more fragmented than the referral network, it nonetheless appears to be reasonably coordinated.[19]

PLANNING

The Madison County interorganizational agenda-setting network contains 44 relationships, for an overall density of .037. The cluster analysis of

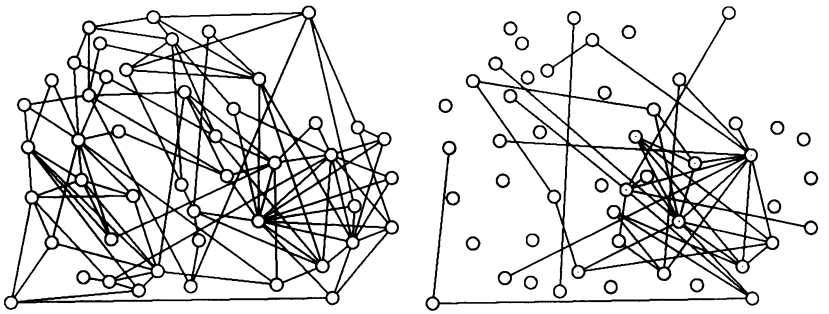
Table 3: Interorganizational Goal Support Relationships between and within Subnetworks

	Aging/ Social Services	*Health Services*	*Poverty/ Emergency Services I*	*Poverty/ Emergency Services II*	*Poverty Emergency Services III*
Aging/Social Services	33*	5	6	5	4
	.31†	.02	.05	.06	.07
Health Services	5	29	5	0	0
	.02	.32	.04	.00	.00
Poverty/Emergency Services I	6	5	8	3	1
	.05	.04	.29	.06	.03
Poverty/Emergency Services II	5	0	3	7	2
	.06	.00	.06	.47	.08
Poverty/Emergency Services III	4	0	1	2	6
	.07	.00	.03	.08	.50
Number of organizations in the subnetwork	15	14	8	6	4

*Number of goal support relationships.

†Density of goal support relationships.

Figure 1: Integrative Coordination in Madison County



(a) Administrative (b) Planning

these data presents a much bleaker picture of integrative coordination than that obtained for the two previous analyses. It yielded 22 subnetworks: one connected subnetwork consisting of 28 organizations, and 21 isolated subnetworks, each consisting of a single organization. The overall integrative coordination index is .30.[20] Figure 1b shows the interorganizational agenda-setting network. A visual comparison with the goal support network is striking, showing how much more coordinated the administrative process is than the planning process.

OTHER RESULTS

For obvious reasons, it is difficult to generalize from a single data point, and we would be hard pressed to call into question findings from several decades based solely on our results from Madison County's elder services program. However, Madison County is only one of six sites where we collected similar data (see Table 4 for sample sizes) and performed similar analyses,[21] all with similar results. Like Madison County, Mobile County is a major metropolitan area in Alabama, with a population of 365,000. Etowah County and Morgan County each have a population of approximately 100,000, with approximately 70 percent living in urban areas. Greene County and Wilcox County, both of which are rural areas, each has a population of approximately 10,000. Table 4 summarizes our findings for the six counties, showing the general consistency of the results. Notably, the measure of integrative coordination in service delivery based on interorganizational access to services mirrors that derived from our analysis of fragmentation ($r = .84$ across the six counties), suggesting the validity of these measures.[22]

Table 4: Levels of Integrative Coordination in Service Delivery, Administration, and Planning for Six Alabama Counties

	Madison County	*Mobile County*	*Etowah County*	*Morgan County*	*Greene County*	*Wilcox County*
Population (in thousands)	200	365	100	100	10	10
Integrative Coordination						
Service delivery (based on fragmentation)	.72	.77	.66	.67	.67	.59
Service delivery (based on interorganizational access to services)	9.79	10.11	9.48	8.98	7.86	7.45
Administration	.45	.59	.50	.43	.33	.44
Planning	.30	.29	.37	.34	.25	.36
Target organizations*	49	81	48	55	36	43
Responding organizations†	47	76	42	49	28	38

*Number of organizations identified as comprising the elder services system in each county and included on the interorganizational analysis questionnaire.

†Number of target organizations completing the interorganizational analysis questionnaire. The ratio of responding organizations to target organizations reflects the response rate.

CONCLUSIONS AND IMPLICATIONS

We began by suggesting that integrative coordination is a complex, multidimensional concept that too often has been treated as a simple, unidimensional phenomenon. Our analysis lends support to this conclusion, suggesting that integrative coordination in the delivery of services, in the administration of agencies, and in planning *do* appear to involve different dynamics; and that integrative coordination in one area does not imply coordination in the others.

SERVICE DELIVERY

Based on our analyses, we found integrative coordination in planning to be most difficult to achieve, coordination in the delivery of services to be most easily achieved, and administrative coordination to fall somewhere in the middle. In the area of service delivery, our results are remarkably consistent across sites, with observed levels of integrative coordination in six counties ranging between .59 and .77. Others (e.g., Gans and Horton, 1975) have suggested that this is the area where voluntary coordination is most likely to develop, and the reasoning would seem to be straightforward. Organizations resist coordination for a variety of reasons, but perhaps most pervasive among them is turfism (e.g., Morris and Lescohier, 1978; Van de Ven and Ferry, 1980). However, turf protection may be more important to

administrators than to street-level bureaucrats (Lipsky, 1980),[23] who typically are responsible for forging referral linkages with other organizations. Thus, at least one of the impediments to integrative coordination largely vanishes for interorganizational service delivery relationships.

In addition to our findings about the general level of integrative coordination in interorganizational service delivery relationships, a comparison of the levels of coordination across sites is instructive. Integrative coordination is greatest in Mobile County and Madison County, the two metropolitan areas, and lowest in Wilcox County, one of our two rural sites. This may be related to another finding about awareness of the referral system and how it functions. In the two metropolitan areas we studied, the correlation between organization i's report that it refers clients to organization j and j's report that it receives client referrals from i is greatest ($r = .36$ in Madison County and $r = .31$ in Mobile County); in turn, correspondence is lowest in the two rural sites.[24] This suggests that referrals may be better monitored, that follow-up procedures may be better developed, and that therefore integrative coordination should be greater in the metropolitan areas than in the rural areas. We observe the latter, and we can infer the former from our data. Madison County and Mobile County are considerably more populated than the other counties, and their health and human service delivery systems are more complex and specialized than those we found in the other counties. This suggests that greater complexity may create the perceived need for better developed and more closely monitored referral procedures; alternatively, it may suggest that greater specialization leads naturally to greater awareness of and follow-up on referrals. But whatever the cause-effect relationship, these findings run counter to the paradox of success suggested in the opening section. With the availability of more services, and the options provided by those services, the health and human service system is able to function in a more coordinated manner.[25]

In addition to specialization, general lack of resources may inhibit coordination in the rural counties. As suggested earlier, interagency coordination requires more rather than fewer resources to accomplish–particularly in the short term, where startup costs for new, interagency programs can be particularly high. But increased costs are offset by more effective services, such that in the long term, coordination should become cost effective. However, resource-poor rural areas seldom have the funds to develop interagency programs, limiting the maximum possible integrative coordination in these areas. In contrast, resource-rich urban areas have no such constraints.

ADMINISTRATION

As suggested earlier, we should find considerably less integrative coordination in administrative relationships–which we do: actual levels of adminis-

trative coordination vary considerably, between .33 and .50, but they are consistently lower than observed levels of integrative coordination in service delivery. Administrative coordination is lowest in Greene County, the most rural and least complex of the six sites. This suggests the possibility that when organizations serve a generalist function–as typically happens in rural areas–their need for integrative coordination decreases, and there is less incentive for them to engage in cooperative administrative relationships (e.g., Neugeboren 1985).[26]

PLANNING

Finally, the planning process appears to be quite fragmented in all six sites. This leads us to suspect that researchers may have been reacting largely to the difficulties inherent in planning when they developed their conclusions about general fragmentation in community-based health and human service systems. We can suggest several reasons why planning may be less coordinated than service delivery or administration. First, service delivery is relatively straightforward, and it requires only that client services be appropriately administered. In contrast, planning involves hard questions (where is the system headed? how do we get it there?). In other words, once a plan has been developed (or even in the absence of a plan), policy is easily implemented through the delivery of services. But developing the plan in the first place is a much more difficult proposition. Second, most service providers are in substantial agreement about appropriate procedures for providing services (e.g., procedures for referral follow-up); but they are in much less agreement about philosophical issues involved in human services (e.g., the role of governmental funding versus funding from the private sector; the usefulness of providing subsidies versus training to clients). These latter issues seldom surface in interaction involving the delivery of service, but they are part and parcel of the planning process. Thus, integrative coordination in the planning process is constrained by philosophical cleavages among agenda-setting participants in the community (cf. Morris and Lescohier 1978). Third, categorical funding for programs requires agency directors and representatives to be advocates for *their* clients (Morris and Lescohier 1978; Neugeboren 1985), and agenda-setting relationships usually develop among individuals with similar programmatic concerns (Bolland and Wilson 1989). Thus, we may expect to find a group of people discussing mental health issues, another discussing aging issues, and still another discussing health issues; but it is difficult to generate a systemwide dialogue that crosscuts programmatic boundaries.

As a final enigma, we should consider how it is possible to obtain integrative coordination in the delivery of services when integrative coordination in administration and (particularly) planning is so limited. Part of

the answer, as suggested earlier, lies in the fact that different people are responsible for achieving these different types of coordination. In the case of service delivery, the service deliverers of different organizations must work together, whereas in the case of administration and planning, agency administrators bear the burden. More important, however, we should reconsider the assumption that integrative coordination equates with effectiveness. Organizations can–and do–work together to provide services in a coordinated manner, but it is not always clear that these are the *appropriate* services to provide. Further, as we found in our two rural sites, services can be reasonably integrated although not necessarily comprehensive; thus, it is not clear that an integratively coordinated service delivery system addresses all the needs of all the needy. These, after all, are planning issues that, for the most part, cannot be adequately addressed within a service delivery framework. Effective planning and a coordinated planning process allows the system to adapt to changing needs and changing clients; but without an effective planning process, services may not adapt to a changing environment. Warren, Rose, and Bergunder (1974) discuss this conservative force as *institutionalized thought structure.* Given the low level of integrative coordination that we have observed in the planning process, we must question whether community-based health and human services for the elderly are being delivered within an appropriate framework.

This, in turn, leads us to consider proposed models of health care reform that aim primarily to achieve efficiency through coordinated service delivery. The most widespread attempt to facilitate coordination in the delivery of health and human services is case management, which has a long history. But coordination of services also lies at the heart of other, more recent proposals for health care reform, including managed care (e.g., Rosenau 1993), systems integration (e.g., Federal Task Force on Homelessness and Severe Mental Illness 1992), one-stop shopping (e.g., Macro Systems, Inc. 1990), and managed competition (e.g., Enthoven, 1988). However, our results lead us to question whether these reforms can be effective if they are not accompanied by means to promote interagency cooperation in the planning and agenda-setting process.

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NOTES

1. One recent treatment (Alter and Hage 1993) emphasizes comprehensiveness of services (e.g., number of services, continuum of care), client access to services (e.g., eligibility, transportation, physical access), and compatibility of services (e.g., interagency cooperation, congruence of programs) as components of coordination. Of these, the last captures most of the elements of integrative coordination as we define it further on.
2. Notable exceptions occur in the work of Van de Ven, Walker, and Liston and Alter and Hage. Based on their empirical analysis of 21 organizations comprising a regional council of children and youth services in a Texas city, Van de Ven, Walker, and Liston (1979) report a set of functional *roles* different organizations assume that is very similar to what we suggest: direct services, resource transactions (i.e., funding), and planning; further, they report different levels of coordination for organizations with these different functional roles. Alter and Hage (1993) also differentiate between service delivery and administration in their assessment of coordination; however, they do not explicitly discuss planning as a separate coordinative activity.
3. This is not to suggest that operational definitions of *pattern* have not been advanced. For example, Katz and Kahn (1978) suggest the importance of studying *organizational clusters*, with each cluster centered on a specific need; to the extent that relationships connect these clusters, the system is coordinated. Leiter and Webb (1983) advocate this approach as well. (We will return to the concept of organizational clusters later.) In another example, Morrissey, Tausig, and Lindsey (1985) suggest the analysis of organizational roles in determining coordination, wherein roles are defined by organizations with equivalent patterns of relationships in the interorganizational network; to the extent that organizational roles are well defined in the interorganizational system, coordination exists.
4. Leiter and Webb (1983, 72) argue that "a clustered, organized agency network is more accessible to both clients and members of neighboring services, because its procedures are more defined." While this may be true, the more organized the network (in terms of clusters), the fewer the links between clusters and the less coordinated the overall system. This latter view is more like that promoted by Hjern and Porter (1981), and more recently by Provan and Milward (1991): in a coordinated system, "clients may enter the system at any point and have access to the system as a whole" (p. 394).
5. Morrissey (1992) notes the importance of selecting appropriate organizations for the analysis. In choosing organizations to include in our analysis, we used the following guidelines. First, we included all organizations that provide services to the elderly, except in cases where multiple organizations provide strictly comparable services in the community (e.g., six nutrition sites provide meals for the elderly; seven nursing homes provide skilled care; eleven agencies provide home health services). In these situations, we selected at least two organizations (including the largest) providing comparable services.

6. Another critical methodological issue in the study of interorganizational relationships is the choice of respondents from organizations (Morrissey 1992). In all cases, we initially contacted the executive director of the organization and asked him or her to complete the questionnaire; in 32 cases this occurred. In ten other cases, the executive director referred us to program directors within the organization, who completed the questionnaire. Finally, in five cases where the organization operated multiple programs serving elderly clients, we asked directors from each of these programs to complete the questionnaire.
7. Even limiting the number of organizations we analyzed in the way suggested by note 5, our sample of 47 agencies in Madison County exceeds the number sampled in almost any other study. For instance, Wickizer, Von Korff, Cheadle, et al. (1993) averaged fewer than 30 agencies across their 28 sites. Van de Ven, Walker, and Liston (1979) sampled 21 agencies in their Texas study. And Alter (1988), in her study of two elder service systems (in counties with populations roughly comparable to Madison County), sampled 14 and 12 agencies, respectively. Our samples in our other sites ranged between 28 and 76 (see Table 4), with an overall average across the six sites of 46.77.
8. This questionnaire, as well as the *leadership questionnaire* (to be discussed shortly) were designed specifically for this study, although the approach underlying the interorganizational analysis questionnaire is adapted from Van de Ven and Ferry (1980). Both employ a number of questions beyond those discussed here, and both are available on request from the authors.
9. An adjacency matrix $\mathbf{A} = \mathbf{a}[ij]$ denotes adjacent relationships among the vertices in a network: if $\mathbf{a}_{ij} = 1$, then i and j are linked in the network $\mathbf{A}$ describes; if $\mathbf{a}_{ij} = 0$, then i and j are not linked.
10. The correlation between i's report that it refers clients to j and j's report that it receives client referrals from i is only modest ($r = .36$). This may be due to several factors. First, clients who are referred to another agency do not always get there. Second, clients may not always disclose where they were referred from. Third, agency administrators (the overwhelming majority of those who filled out the questionnaires) are not always aware of referrals that their staffs may make or get. These are all consistent with our finding that reported referrals to other organizations outnumber reported referrals from other organizations (on average, organizations reported that they referred clients to 48.1 percent of the other organizations, whereas they reported referrals from only 40.5 percent of the other organizations). If we adjust for these unequal marginals, the correlation increases to .64.
11. In the case of multiple respondents from the same organization, we calculated the mean response across respondents. Twenty-three pairs of respondents from the same organization completed the questionnaire, with the median correlation (r) between their responses equal to .52. Within-organization correspondence for the two referral questions was also positive, although not as high as for the goal support question (median r for referrals made equals .30; median r for referrals received equals .26). Thus, aggregating responses from multiple respondents in the same organization seems to be a useful way to increase reliability without distortion.

12. Aldrich (1979) argues that the importance of asymmetrical relationships should not be overstated, for they are inherently unstable and, therefore, not evident in most transactions. Mulford (1984) amplifies that statement by maintaining that instability may stem from organizations' reluctance to participate in unbalanced relationships for fear that they may become unduly dependent on other organizations. Our Madison County data partially support these arguments: the correlation between organization i's goal support rating of organization j and j's rating of i is moderate and positive ($r = .38$). Therefore, we limit our consideration of goal support relationships to those that are symmetrical. In contrast, client referrals are inherently asymmetrical, in that they are determined by client needs on a case-by-case basis.
13. In this analysis, we limited the organizations of concern to those 47 for which we had referral data and goal support data, plus the Huntsville City Council and the Madison County Commission.
14. Our approach assumes that organizations tend to interact more with those serving some similar function in the community than with those serving divergent functions. The logic underlying this assumption is consistent with observations about the difficulty of developing and maintaining interorganizational relationships: they tend to follow the course of least resistance. Thus, organizations with similar missions, or with similar clients, or with similar sources of funding will tend to forge links with one another (Van de Ven and Ferry 1980). This approach is superior to one that defines the basis for clustering a priori. Any a priori classification scheme must determine the basis for similarity (e.g., similar services, similar clients, similar sources of funding, similar mission), and therefore it runs the risk of either (a) incorrectly weighing the possible factors, or (b) missing an important factor altogether. We do not consider the reasons for clustering and how they may lead to barriers between organizational clusters; rather, we base our analysis on the identification of these clusters based directly on their interaction patterns. This should bias our findings slightly in the direction of increased fragmentation.
15. The term "clique" is given specific and technical meaning by some network researchers. However, in our discussion, it merely conveys the idea of a group of organizations whose internal linkages are more dense than their external linkages. This aspect of cliquishness has been termed "coherence" by Mariolis (1982).
16. This approach is closer to the clustering formulation of Katz and Kahn (1978).
17. Table 2 shows, for example, that 45 referral linkages have developed from organizations providing health services to organizations providing in-home services, and that 46 referral linkages have developed from organizations providing health services to those providing income maintenance and emergency services.
18. Since we used an artificial criterion to dichotomize the continuous distribution of goal support relationships, we were concerned that our finding might be biased by the criterion we chose (i.e., mean $z = 1.25$). When we experimented with different cutoff levels, we found that the level of coordination does increase (i.e., for $z = 1.0$, coordination is .56; for $z = .8$, coordination is .55; for $z = .65$, coordination is .60). However, even though the coordination index rises as

the criterion for interorganizational linkage is relaxed, the level of coordination remains lower than for referrals.

19. In addition to the questions previously discussed, we also asked respondents to indicate the other organizations with which they had developed cooperative agreements, another example of an administrative relationship. We found little reliability in the responses to this question (i.e., the correlation between *i*'s indication of an agreement with *j* and *j*'s indication of an agreement with *i* was modest, with $r = .25$), so we are hesitant to place too much credence in the results generated by these data. However, when we considered the network of *confirmed* cooperative agreements (i.e., *i* indicates an agreement with *j and* *j* indicates an agreement with *i*), we found an overall level of coordination of just .29.
20. The low level of coordination in the agenda-setting process is *not* an artifact of the low density of interpersonal agenda-setting relationships. Rather, it reflects the fragmentation of the interpersonal agenda-setting network. We found 207 interpersonal relationships among agenda-setting participants; however, given our data analysis protocol, over 1,100 relationships were possible. Further, the network of agenda-setting relationships itself was fragmented, with a coordination index of .36. When we considered organizational affiliations of agenda-setting participants, we found 97 such relationships among people affiliated with the 49 organizations we considered here. However, only 44 of these were *interorganizational*, with the remainder linking individuals within organizations. Thus, we find a considerable drop-off in potential communication of ideas, with more than half (55 percent) of the observed interpersonal relationships linking people with similar (if not identical) organizational perspectives.
21. Table 4 reports the number of organizations we included on the questionnaire and the number responding in each site. As in Madison County, the results generally show high response rates across sites, ranging from 78 percent in Greene County to 94 percent in Mobile County. Overwhelmingly, nonresponding organizations tended to be peripheral: only in two cases did a nonresponding organization receive referrals at a rate one standard deviation above the mean, and in only one case did a nonresponding organization receive goal support ratings that placed it one standard deviation above the mean. As in Madison County, we surveyed multiple respondents from organizations in each of the other sites having distinct programs serving elderly clients. And as in Madison County, correlations among respondents in the same organizations are positive: within-organization median correlations for the goal support question range between .33 and .64; median correlations for referrals range between .27 and .36; and median correlations for received referrals range between .24 and .38.
22. As a second validity check, we asked respondents who completed the leadership questionnaire in each county to evaluate, among other things, the level of coordination in the delivery of elder services and the effectiveness of the comprehensive planning process. We converted these evaluations to within-respondent *z*-scores, to allow us to assess the comparative effectiveness within each county. Across the six counties, the fragmentation-based measure of coordination in the

delivery of services corresponds generally to evaluations of coordination in the delivery of services ($r = .58$); and in every county, evaluations of coordination in the delivery of services were more positive than evaluations of comprehensive planning.

23. This was the sentiment of a number of the people we interviewed during this project, as well.
24. It may initially seem that the lower correlation would lead to greater randomness in the data, and that randomness may, in turn, attenuate our measure of coordination. Exactly the opposite occurs, however. If the data were completely random, d_{yx} would approach zero, and the measure of coordination would increase toward unity.
25. This brings us back to the meaning of coordination, discussed in an earlier section. Alter and Hage (1993) discussed three dimensions of coordination: comprehensiveness, access, and compatibility. Our discussion focuses on interagency relationships, and thus resembles their concept of compatibility. However, the findings reported here suggest that compatibility may be greater in situations where services are more comprehensive (Mobile County and Madison County) than in situations where they are sparse (Wilcox County).
26. Administrative coordination in Greene County is considerably lower than in Wilcox County, perhaps reflecting different administrative arrangements between the Area Agency on Aging and other agencies in the two counties. Alabama is divided into ten multicounty planning regions, each served by an Area Agency. The Area Agency in the region serving Wilcox County is located in Wilcox County, while the Area Agency in the region serving Greene County is located in an adjacent county. Thus, the opportunity for contact between the Area Agency (which is the designated coordinating agency under the Older Americans Act) and other local agencies is limited in Greene County by propinquity problems, and administrative coordination may suffer as a result. We obtain a similar finding for coordination in the planning process in the two counties, which may have a similar explanation.

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